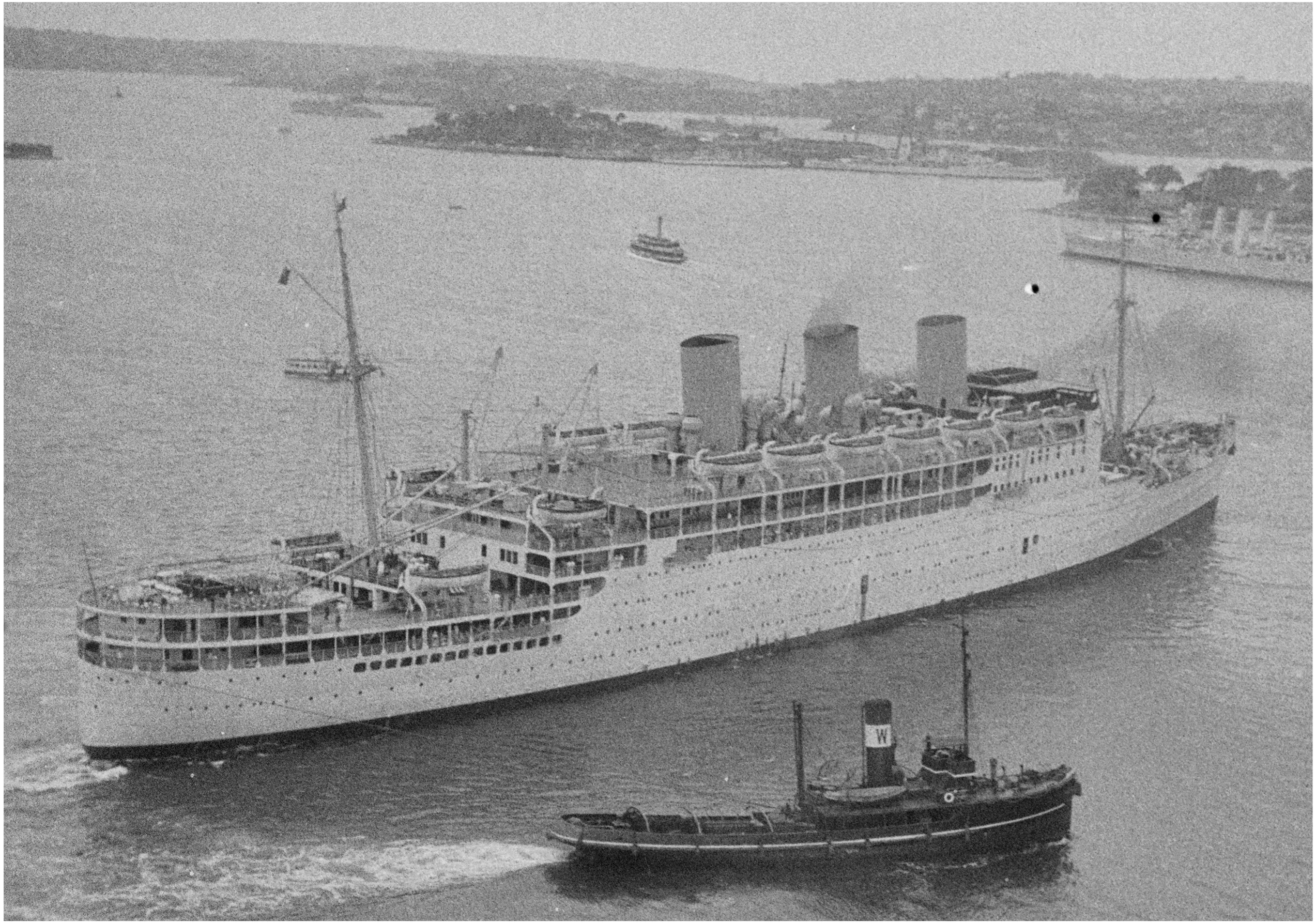
W

Vickers-Armstrongs Ld No 663 & 664

Profile, Panting Arrangement & Ld Bottom Strengthening.

No 663 - T.S.S. Strathnaver
Barrow Rpt No 21..

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

003659-003670-0003

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31.2.30

T.S.S. No. 663-4.

DIMENSIONS 630'-0" B.P. BEAM MLD. 80'-0" DEPTH MLD. 37'-6"

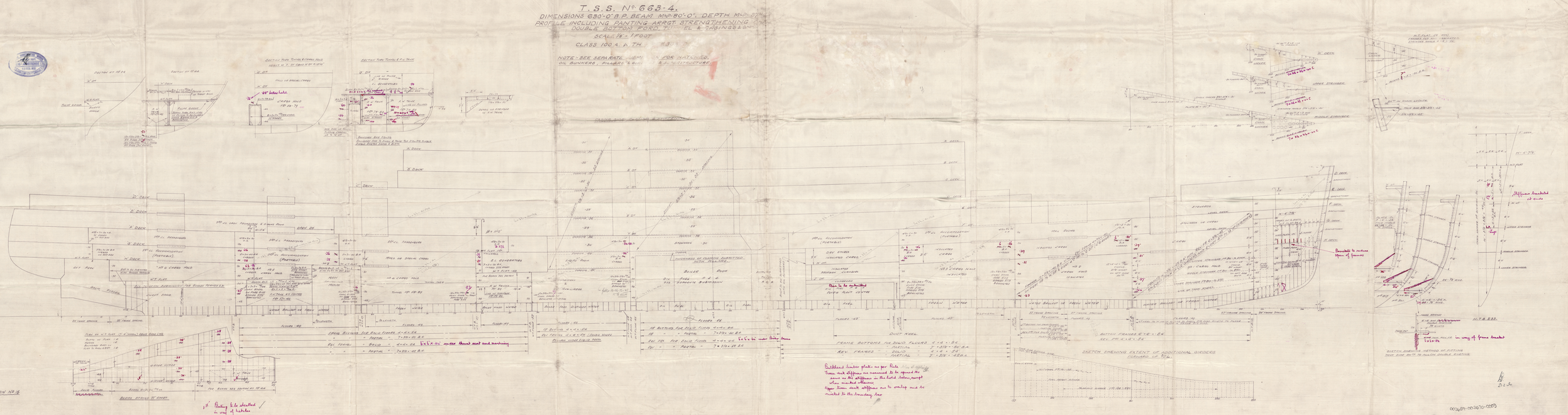
PROFILE INCLUDING PAINTING ARROT STRENGTHENING

DOUBLE BOTTOM FORD. TANKS & CASINGS &c.

SCALE ½" = 1 FOOT

CLASS 100 A. 1. TH. [illegible]

NOTE - SEE SEPARATE DRAWINGS FOR HATCHES, OIL BUNKERS, PILLARS & GIRDERS & SUPERSTRUCTURE.


SECTION AT 15'-6"
SECTION AT 15'-6"A
SECTION THRU TUNNEL & CARGO HOLD
SECTION THRU TUNNEL & OIL TANK
HOLD OF SPACE CARGO
CARGO HOLD
OIL BUNKERS
BUNKERS ARE TO FITS
PROVIDED FOR 3 FORD & THREE TOP FILLING BUNKERS
FORD. TANKS FORM A BOX
SECTION THRU OIL BUNKER
A. DECK
B. DECK
C. DECK
D. DECK
E. DECK
F. DECK
G. DECK
H. DECK
SHELTER DECK
UPPER DECK
MAIN DECK
10 CL. ACCOMMODATION (PORTABLE)
10 CL. PASSENGERS
10 CL. ACCOMMODATION (PORTABLE)
HOLD OF SPACE CARGO
CARGO HOLD
OIL BUNKERS
TUNNEL TOP 12'-0" AB
SUCCESS OF DIVING SUBMITTED WITH PLANS
BULGE
OIL BUNKERS
FOR SERVICE SUBMISSION
Plan to be submitted
PIPE RUN CENTRE
ACCOMMODATION (PORTABLE)
DRY STORES
INSULATED CARGO
INSULATED PROVISION CHAMBER
CARGO HOLD
INSULATED
OIL TANKS
FUEL
FORE PEAK TANK
DOUBLE BOTTOM
FLOORS 48"
FLOORS 42"
FLOORS 36"
FLOORS 24"
FLOORS 18"
FLOORS 12"
FLOORS 6"
FLOORS 3"
FLOORS 2"
FLOORS 1"

Vickers-Armstrongs Ltd No 663/664

Amended Pumping Arrangement

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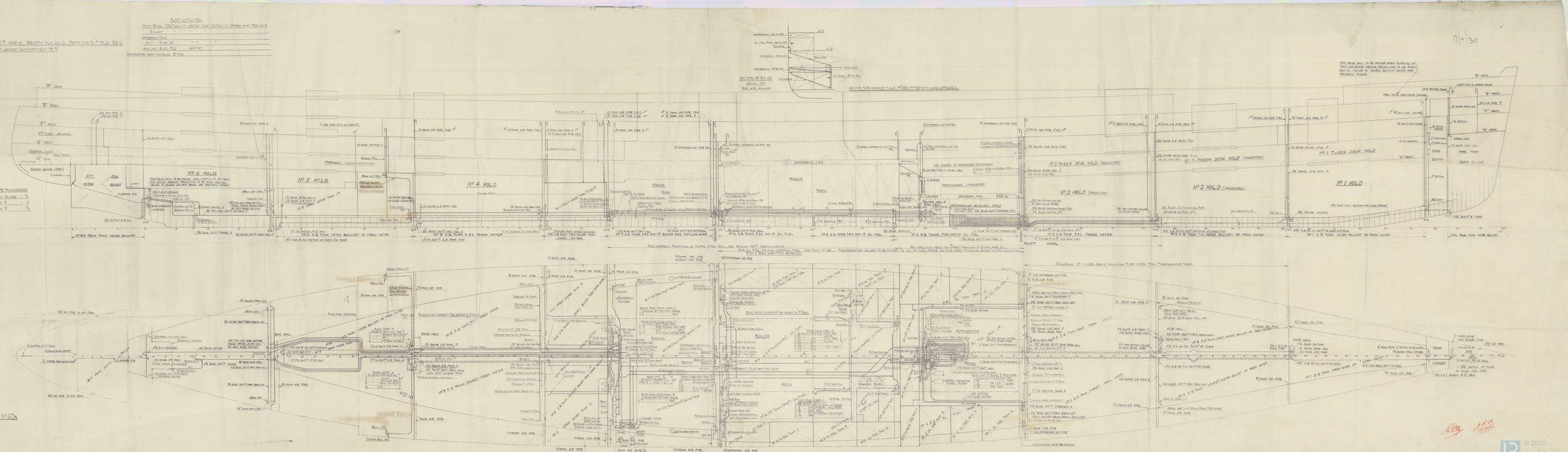
Nº 6634

BILGE AND BALLAST ARRANGEMENT.

SCALE ⅛" = 1 FOOT.



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Plan of Superstructures

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Disc 148

1.

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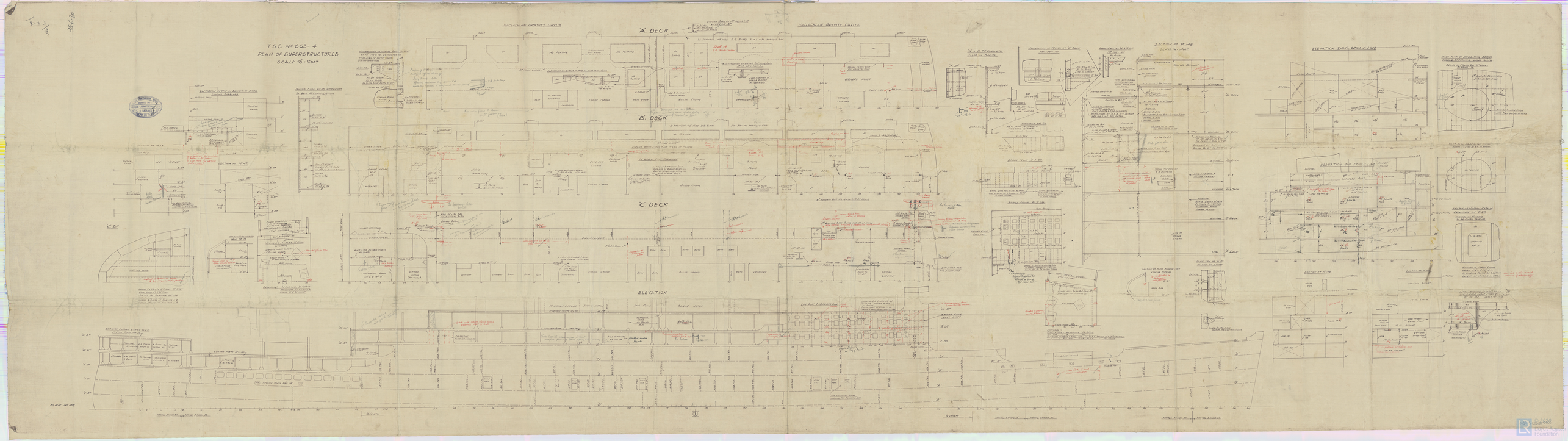
T.S.S. No 668-4

PLAN OF SUPERSTRUCTURES

SCALE 1/8 = 1 FOOT



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"F", "G" & "H" Decks.

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Barrow J. E. Rpt No 2414

No 664 - T. S. S. Strathaird
Barrow J. E. Rpt No 2433

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10.2.30

SHIPYARD
VICKERS - ARMSTRONGS L.
3 FEB 1930
BARROW-IN-FURNESS

NOTE - PLATING OF ALL DECKS ARRANGED FOR MULTIPLE PUNCHING. HATCH END BEAMS SAME SIZE AS ORDINARY BEAMS IN THE VICINITY. SEE SEPARATE SUBMISSION FOR PILLARS & GIRDERS.

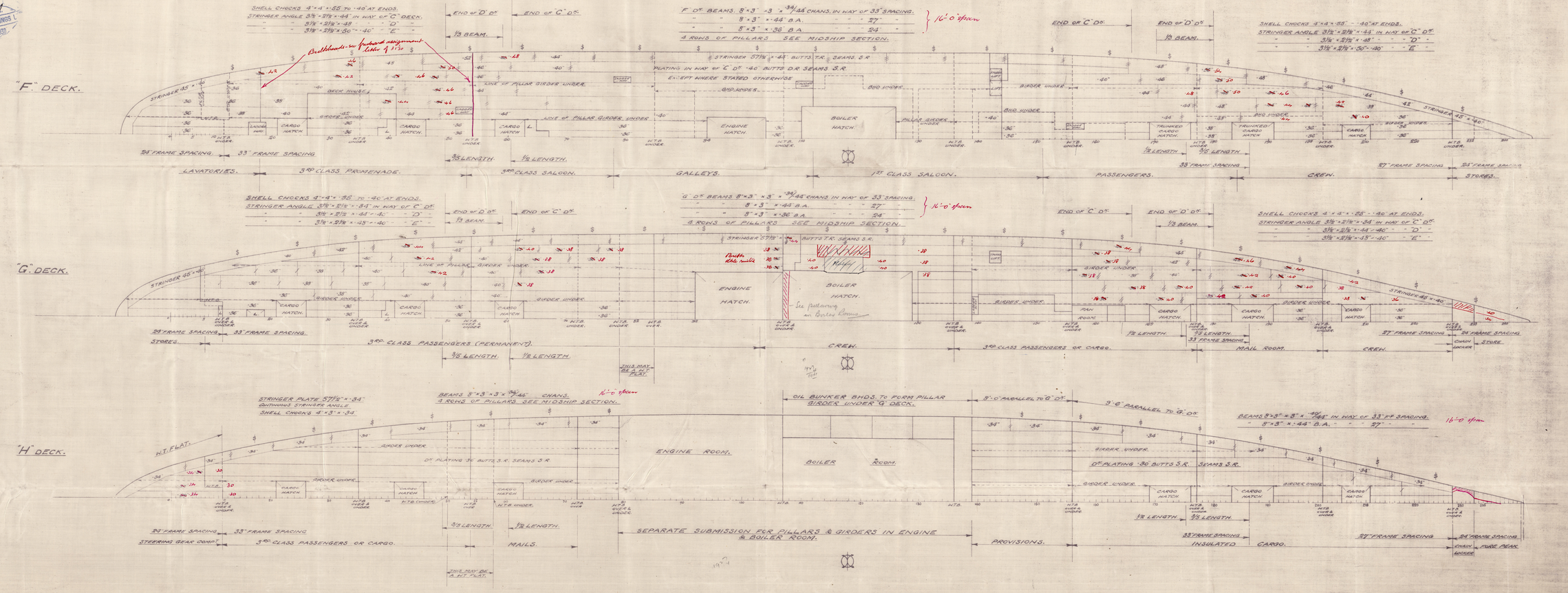
No. 663 - 4.

DIMENSIONS 630'-0" B.P. × 80'-0" × 46'-6" MLD. TO "E" DK.

CLASS 100A WITH FREEBOARD.

DECK PLANS. SHEET No. 2.

SCALE: 1/16" = 1 FOOT.



PLAN No. 5.

8.2.30

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Vickers-Armstrongs Ld Nos 663 & 664

Equipment Particulars

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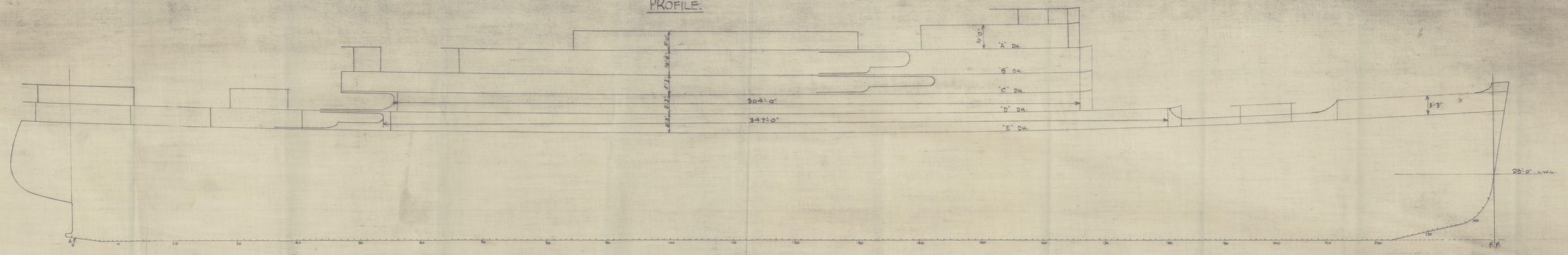
11-2-30

H.M. CONSTRUCTION WORKS
SHIPBUILD DEPT.
VICKERS - ARMSTRONGS LTD.
4 FEB 1930
BARROW-IN-FURNESS

PROFILE.



Nos 663 & 664.

EQUIPMENT.

(SCALE :- 1/16 INCH = 1 FT)

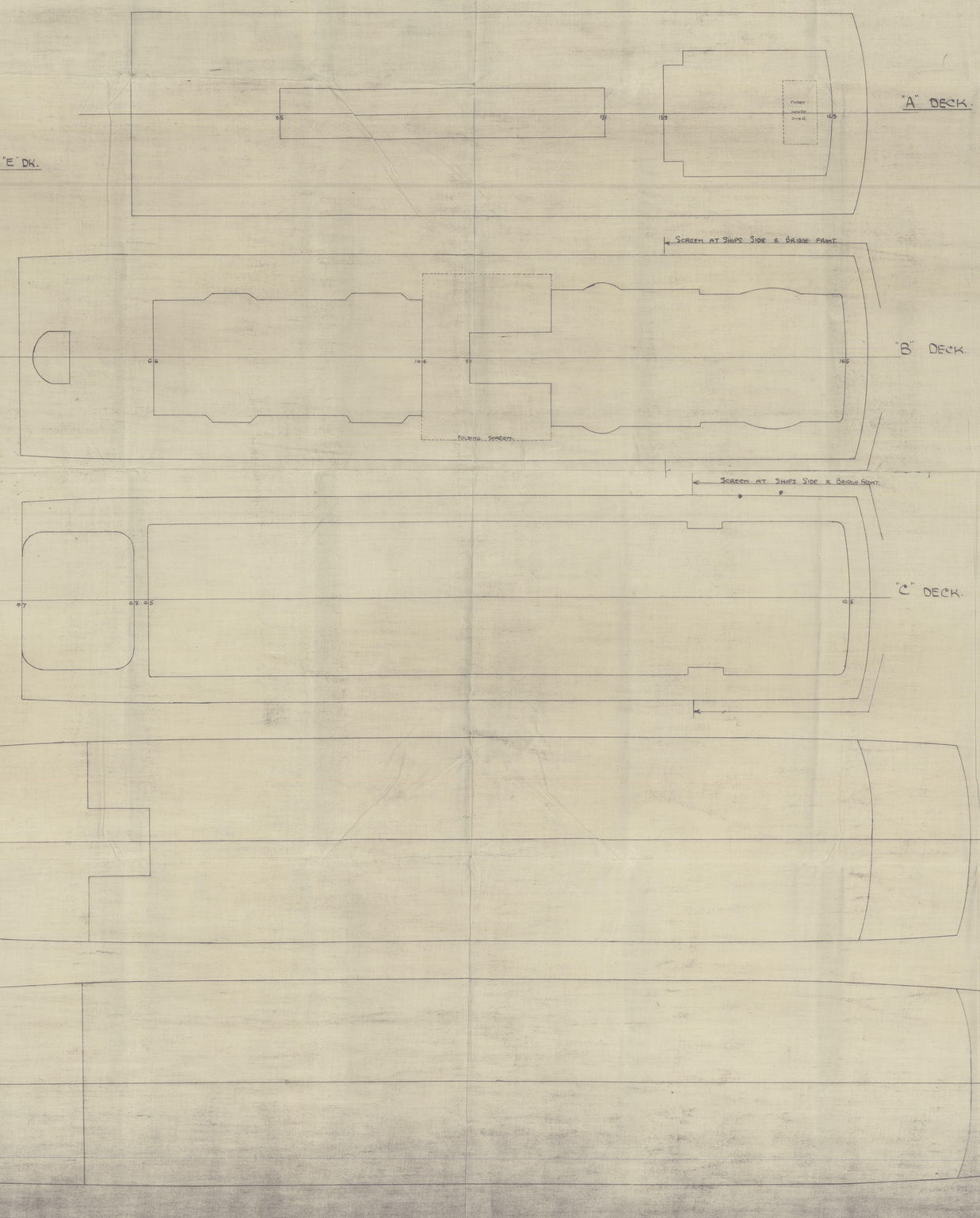
DIMENSIONS :- 630'-0" B.P. × 80'-0" MLD × 46'-6" TO "E" DK.

"D" FOR SCANTLINGS = 44·00

SECOND NUMERAL				
"E" DK.	FRS. 212 TO F.P.	(69 × 8·25 × ·75)	=	427
"E" DK.	6" AFT OF 54 FR. TO 180 FR	(347 × 8·25 × ·75)	=	2147
"E" DK.	FRS. 26 TO 41	(41·25 × 8·25 × ·75)	=	257
"D" DK.	1'-6" AFT OF 56 FR TO 166 FR.	(304 × 8·25 × ·75)	=	1881
"C" DK.	FRS. 65 – 185	(275 × 8·25 × ·5)	=	1133
"C" DK.	FRS 47 – 63	(44 × 8·25 × ·5)	=	182
"B" DK.	FRS 111 – 165	(145·5 × 10·5 × ·5)	=	786
"B" DK.	FRS 66 – 104	(104·5 × 10·5 × ·5)	=	549
"A" DK.	FRS. 85 – 131	(126·5 × 8 × ·5)	=	506
"A" DK.	FRS. 139 – 163	(66 × 10 × ·5)	=	331
		EQUIPMENT No		~~8637~~ 8649

L (B + D) + 375 · 24,025 } + 50 × 42 × ·75 = 4125 }

7827 ?
7826



EQUIPMENT b.t

2 BOWER ANCHORS	STOCKLESS	EACH 137 CWTS	= 274 CWTS	} 390 CWTS.
1 " ANCHOR	"	116 "	= 116 "	
1 STREAM ANCHOR	"	53⅜ "		
330 FATHS. OF 3¼" STUD CHAIN CABLE.				
STREAM WIRE	150 FATHS.	OF 7" STEEL WIRE.	6½ Rule	SFSN
TOWLINE	140 "	OF 7½" " "	7" Rule,	SFSN
HAWSERS	3 AT 120 FATHS.	8" HEMP	OR 2¾" S.W.R	
WARPS.	3 AT 120 "	8" "	OR 2¾" S.W.R.	

11-2-30

PLAN No 6.

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Vickers - Armstrongs Ld No 663 & 664

Topside Plating

No 663 - T.S.S. Strathnaver
Barrow J. & C. Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow J. & C. Rpt No 2433

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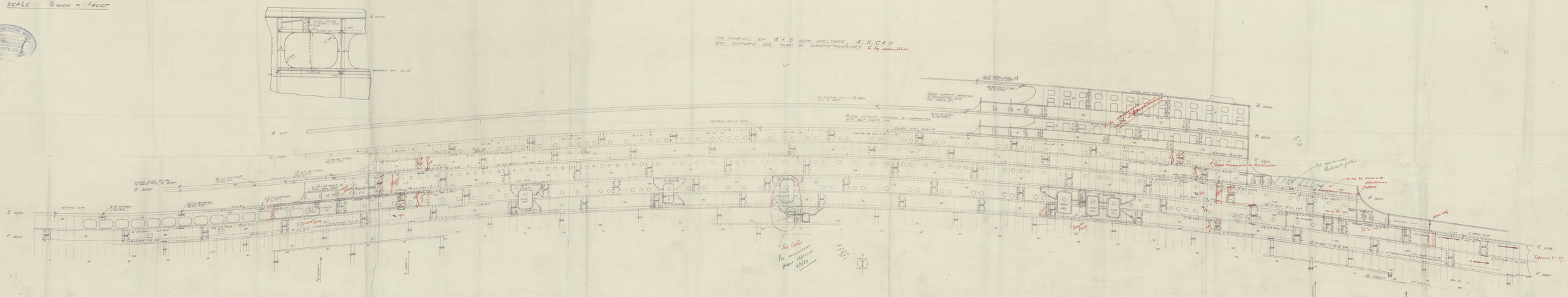
Nos 663 AND 4 7/3/30.

EXPANSION OF TOPSIDE PLATING

SCALE - ⅛ INCH = 1 FOOT



7.3.30

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Vickers-Armstrongs Ld No 663/4

Arrangement of Insulated Cargo Spaces

Sheet 2.

No 663 – T.S.S. Strathnaver
Barrow J. E. Rpt No 2H16

No 664 – T.S.S. Strathaird
Barrow J. E. Rpt No 2H34

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Nos 663 and 4

ARRANGEMENT OF INSULATED CARGO SPACES

AND PROVISION CHAMBERS.

SCALE 1/4 INCH = 1 FOOT

SHEET 2 - PLAN VIEW

NOTE

THE ARRANGEMENT OF MACHINERY SHOWN IS AS AT PRELIMINARY AND MAY BE MODIFIED.

FOR GENERAL PLAN FOR DETAIL OF PROVISION ROOM SEE PLAN.

ALL STEEL WORK TO BE PAINTED WITH RUST PROOF PAINT AND THE WHOLE CENTRE BULKHEADS PAINTED.

THIS TUBE TO BE CONNECTED WITH SUITABLE DRAIN ARRANGEMENT.

PORTION OF TARPAULIN TUBES WILL BE SHOWN LATER.

PLAN SHOWS INSULATED SPACES TO BE KEPT IN CARGO IN TO WHICH AND BOUNDARIES OF PROVISION TO WHICH BELOW DECK.

PLAN VIEW AT HOLD

THE SEPARATE PLAN FOR PORTIONS OF ENGINES IN HOLDS

PLAN VIEW AT 7 DECK

PLAN VIEW AT 4 DECK

PLAN VIEW OF FOR ROOM

KEY PLAN OF HATCHES

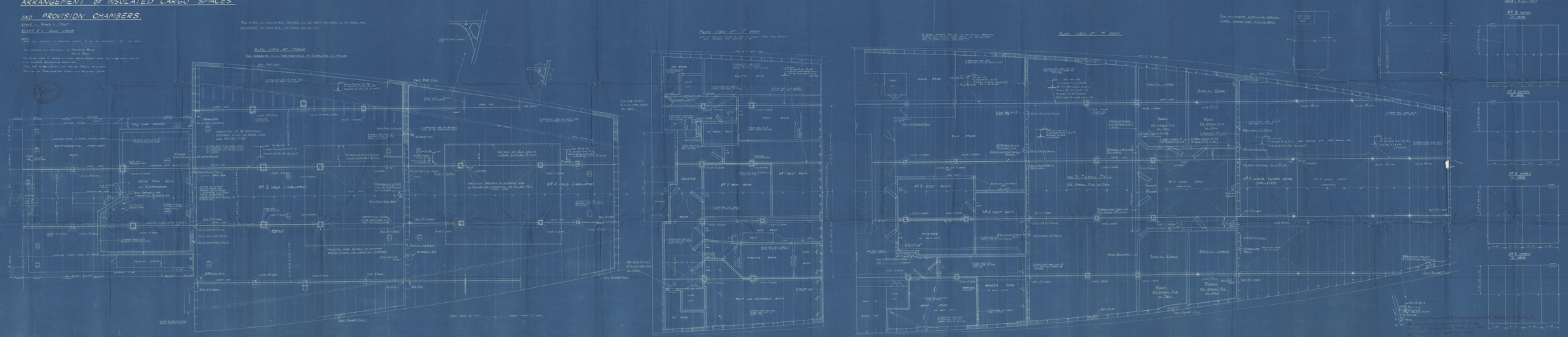
SCALE 1/8 INCH = 1 FOOT

No 1 HATCH 4 DECK

No 2 HATCH 4 DECK

No 3 HATCH 4 DECK

No 4 HATCH 4 DECK



Vickers-Armstrongs Ld 40663/4

Arrangement of Insulated Cargo Spaces

Sheet 1.

No 663 – T.S.S. Strathnaver
Barrow J. & R. Rept No 2416

No 664 – T.S.S Strathaird
Barrow J. & R. Rept No 2434

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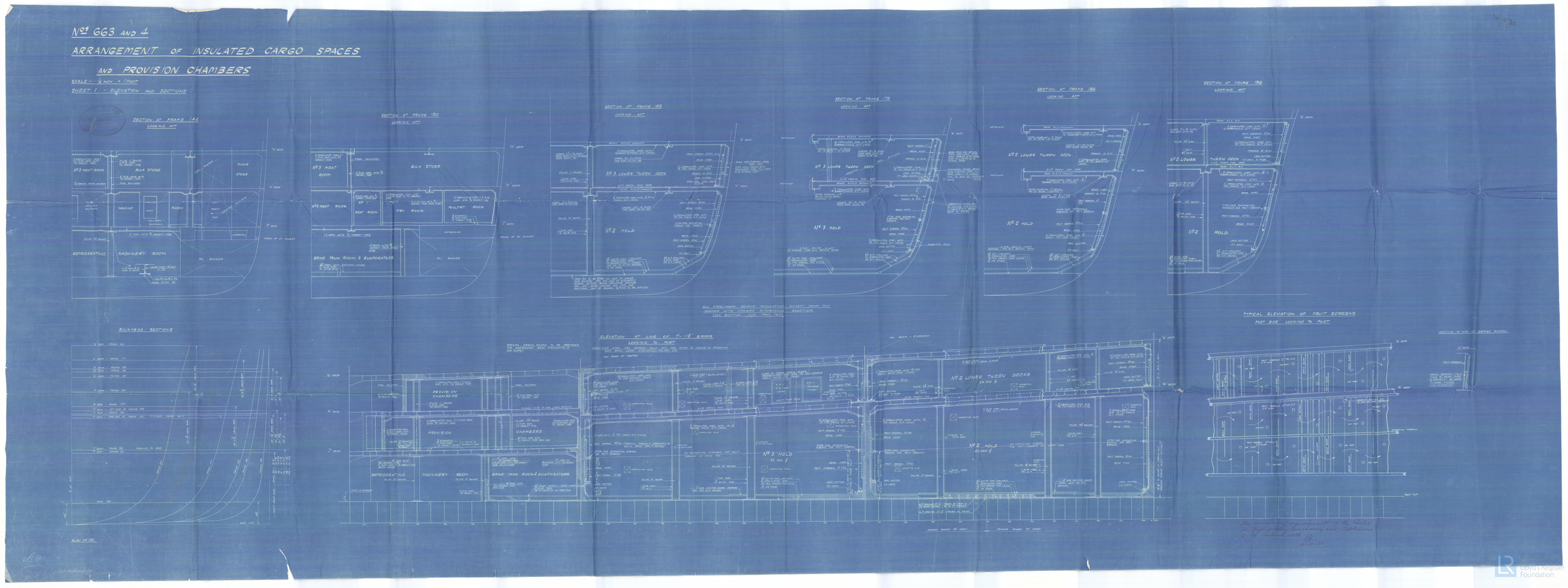
Nos 663 and 4

ARRANGEMENT OF INSULATED CARGO SPACES AND PROVISION CHAMBERS

SCALE:- ¼ INCH = 1 FOOT

SHEET 1 - ELEVATION AND SECTIONS

14/8/30



The accompanying specimens of the fittings for refrigerating machinery and appliances to be approved with J.H.
27-8-30

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Bossed Framing

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Barrow J. & R. Rpt No 2414

No 664 – T.S.S. Strathaird
Barrow J. & R. Rpt No 2433

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27.3.36

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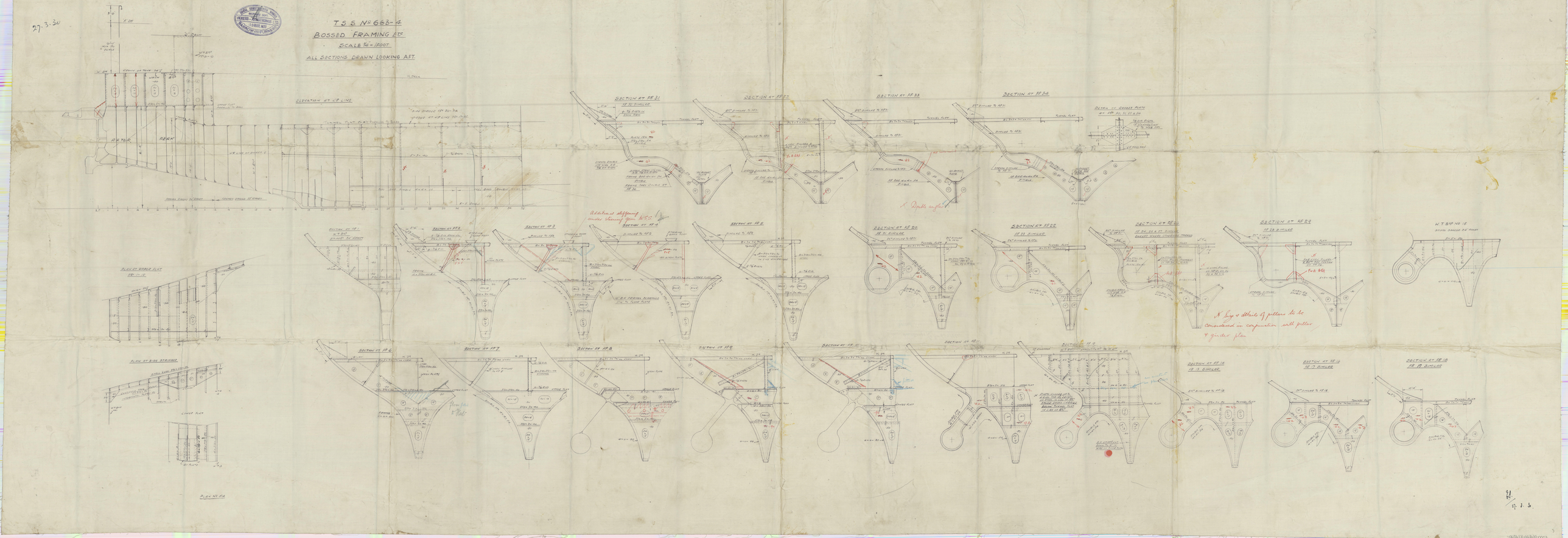
13 MAR 1970
MANUFACTURERS OF STEEL STRUCTURES

T.S.S. No 663-4

BOSSED FRAMING etc

SCALE ½" = 1 FOOT

ALL SECTIONS DRAWN LOOKING AFT.



27.3.36

Vickers. Armstrongs Ld No 663 & 664

Main Shafting

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Barrow J. E. Rpt No 2414

No 664 — T. S. S. Strathaird
Barrow J. E. Rpt No 2433

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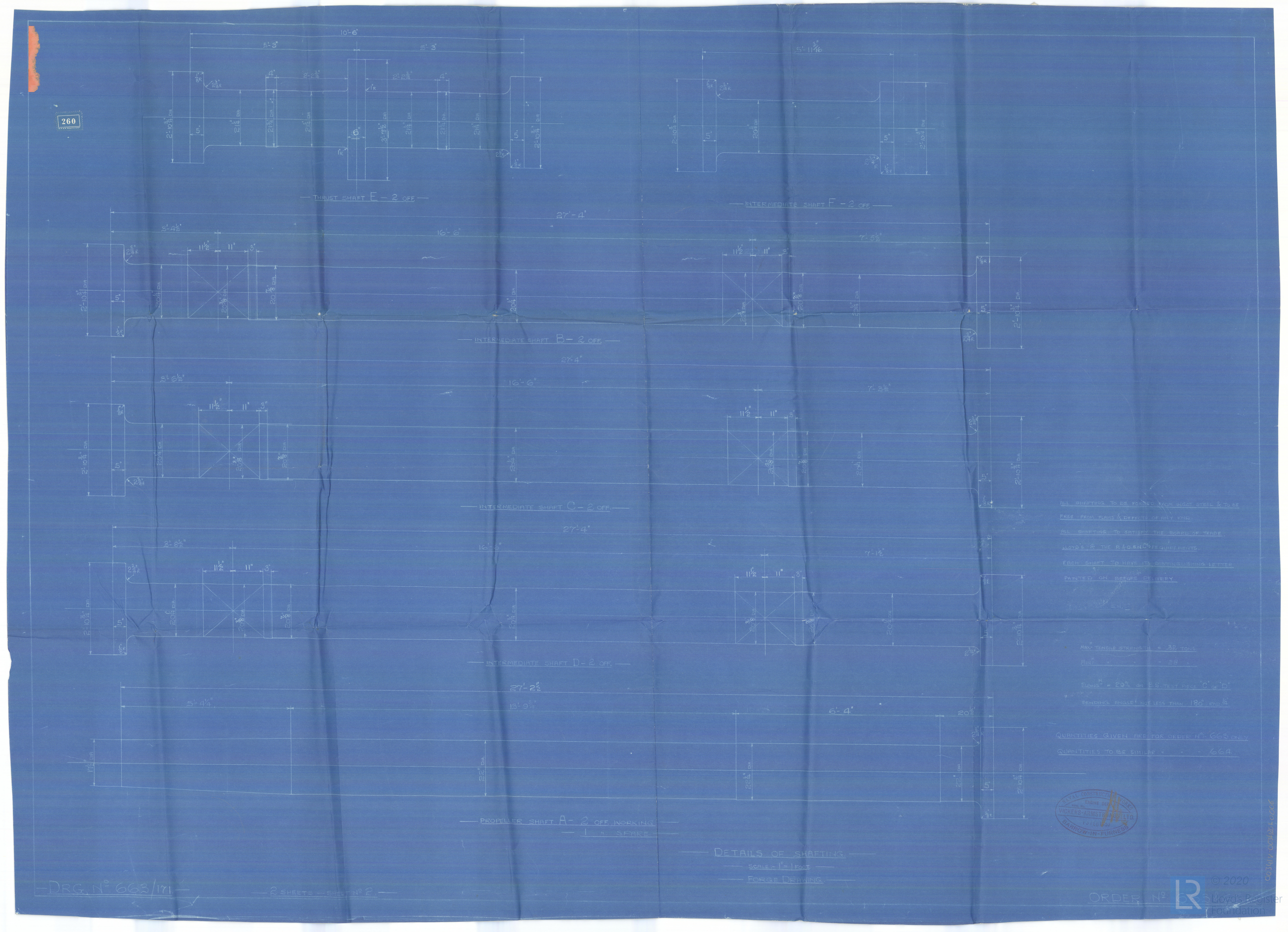
260



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bickers - Armstrongs Ld No 663/664

Shaft Brackets

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Barrow Rpt No 2433

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TWIN SCREW STEAMERS - Nos 663-4

SHAFT BRACKETS

28/3/30 SCALE :- ½ INCH = 1 FOOT AND AS MARKED

NOTES :-

BRACKETS TO BE OF CAST STEEL
TO BE IN ACCORDANCE WITH LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS FOR CLASS 100 A1 AND PASSENGER CERTIFICATE

SEA SPEED	-	20 KNOTS
TRIAL SPEED	-	22 KNOTS
S H P	-	14 000 PER SHAFT
REVS PER MIN	-	125
DIA OF PROPELLER	-	19'- 0"
" TAIL SHAFT	-	22" - 24 OVER LINER

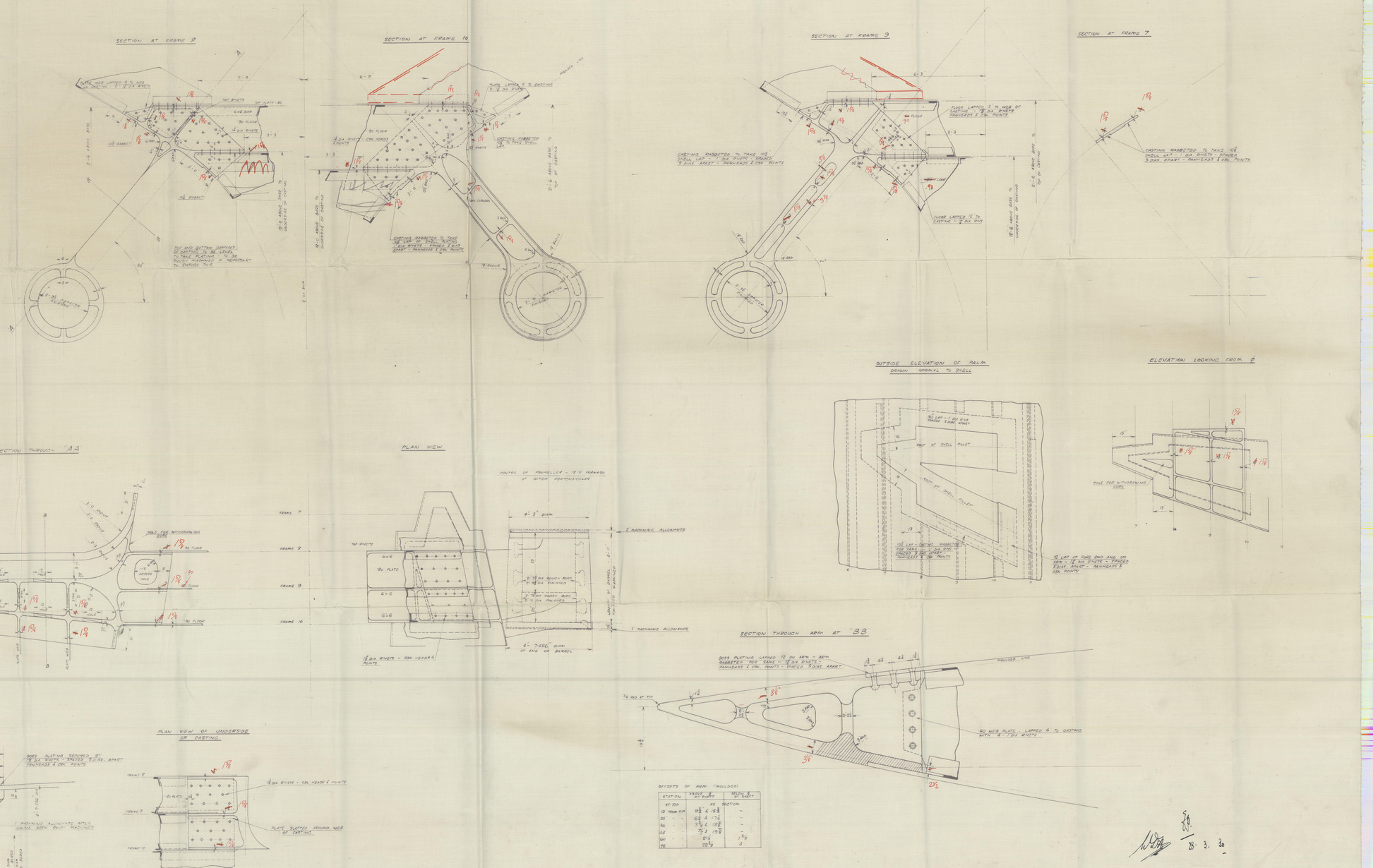
SHAFT CENTRES

	HEIGHT ABOVE BASE	OUTREACH FROM ℄
FRAME 6 CENTRE OF PROP	10'- 9"	19'- 3"
" 58 "	13'- 7½"	10'- 6"

NOTES

1. APPROXIMATE WEIGHT OF EACH CASTING - 16½ TONS
2. MOULDS WILL BE SUPPLIED BY SHIPBUILDERS - CONTRACTORS TO PROVIDE PATTERNS
3. ALL RIVET AND TAP HOLES TO BE DRILLED BY CONTRACTOR
4. PATTERNS WHEN READY, TO BE CHECKED BY SHIPBUILDERS REPRESENTATIVE WHO WILL VISIT CONTRACTORS WORKS FOR THE PURPOSE, AND TO MARK OFF POSITIONS OF ALL RIVET HOLES AND TAPPED HOLES
5. BARREL TO BE ROUGH BORED AND ENDS ROUGH MACHINED BY CONTRACTORS
6. LARGE FILLETS TO BE PROVIDED THROUGHOUT AND ALL SUDDEN CHANGES OF SECTION TO BE AVOIDED AS FAR AS POSSIBLE
7. RABBETS IN CASTING TO BE SQUARE DRESSED BY CONTRACTORS
8. RIVET HOLES DRILLED 1/64" LARGER IN DIAMETER THAN RIVETS WHICH THEY ARE TO TAKE
9. CASTINGS TO BE MACHINED WHERE TINTED RED
10. CASTINGS ARE TO BE CLEAN, SOUND AND FREE FROM ALL TWIST AND BLOW HOLES, ETC.
11. ALL RIVET HOLES TO SUIT SHIPBUILDERS PATTERN RIVET

J. CONSTRUCTION WORKS
SHIPYARD DEPT.
W.G. ARMSTRONG
21 MAR 1930
WHITWORTH LTD.



28. 3. 30

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Vickers Armstrongs Ltd Nos 663/664

Stern frame and "Cut up"

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Barrow Rpt No 2414

No 664 - T.S.S. Strathaird
Barrow Rpt No 2433

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~~Vickers Box 145~~

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18/3/30

Nos 663 – 4.

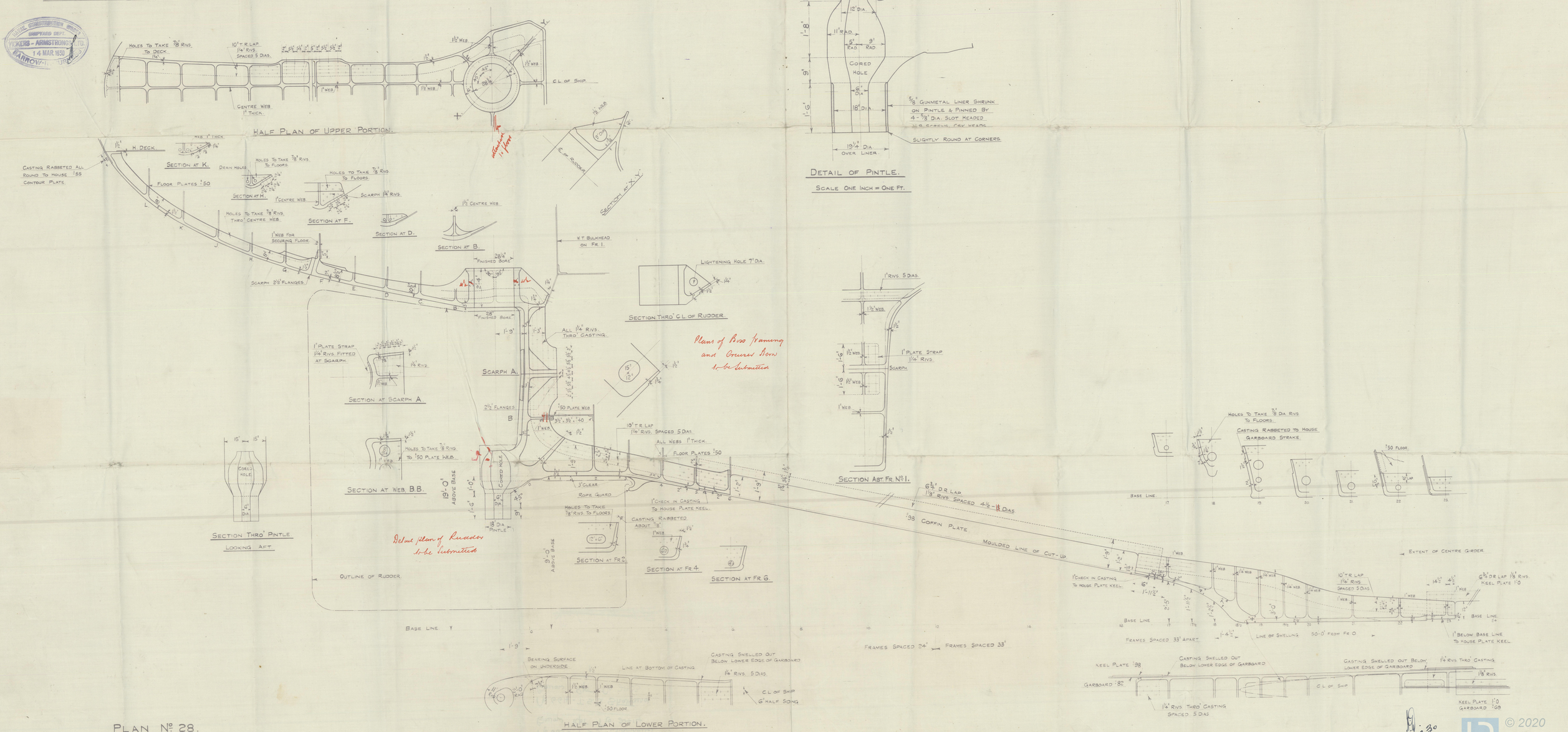
STERN CASTINGS AND "CUT-UP."

SCALE 1/2 INCH = ONE FOOT.

MATERIAL OF CAST STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS

POSITION AND NUMBER OF TEST PIECES TO LLOYDS AND BOARD OF TRADE SURVEYORS SATISFACTION

NAVAL CONSTRUCTION DEPT. SHIPYARD DEPT. VICKERS - ARMSTRONGS LTD. 14 MAR 1930 BARROW-IN-FURNESS



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bickers - Armstrongs Ld No 663/664

Rudder Plan.

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29.3.30

Nos 663 AND 4.

RUDDER PLAN.

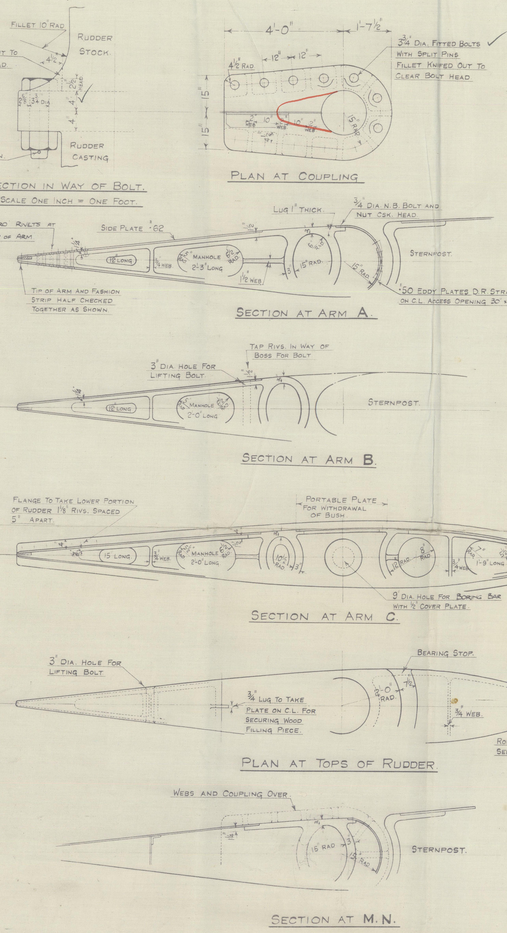
SCALE ½ INCH = ONE FOOT.

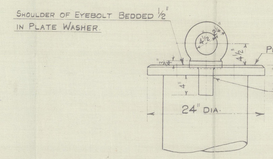
RUDDER CASTING OF STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS.
RUDDER STOCK OF FORGED STEEL TO LLOYDS AND BOARD OF TRADE TESTS AND REQUIREMENTS.
AREA OF RUDDER 252 SQ. FT.
SEA SPEED = 20 KNOTS. ~~MAXIMUM TRIAL SPEED 22 KNOTS.~~

NOTES:-

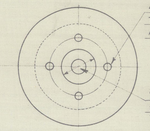
1. POSITION AND NUMBER OF TEST PIECES TO LLOYDS AND BOARD OF TRADE SURVEYORS SATISFACTION.
2. INTERIOR OF LOWER PORTION OF RUDDER TO BE WELL COATED WITH BITUMEN, THE BOTTOM BEING FILLED IN SOLID.
3. TAPERED LINERS TO BE FITTED IN LOWER PORTION OF RUDDER WHERE THERE IS INSUFFICIENT ROOM TO PASS RIVETS AND THROUGH RIVETS FITTED.

NAVAL CONSTRUCTION WORKS
SHIPYARD DEPT.
WM. ARMSTRONG, LTD.
21 MAR 1930
NEWCASTLE

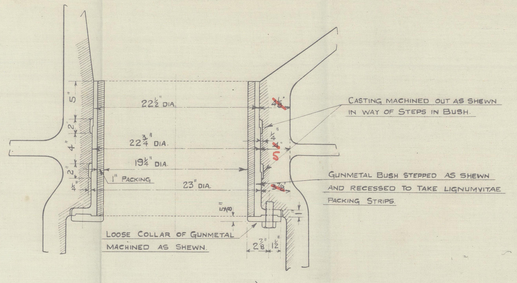


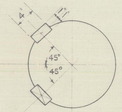


DETAIL OF LIFTING EYE AND PLATE.
SCALE ONE INCH = ONE FOOT.

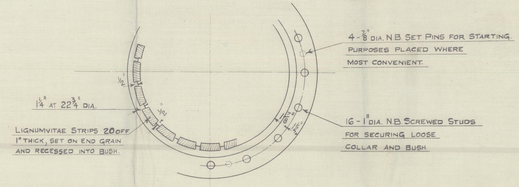


PLAN OF PLATE WASHER.
SCALE :- ONE INCH = ONE FOOT.

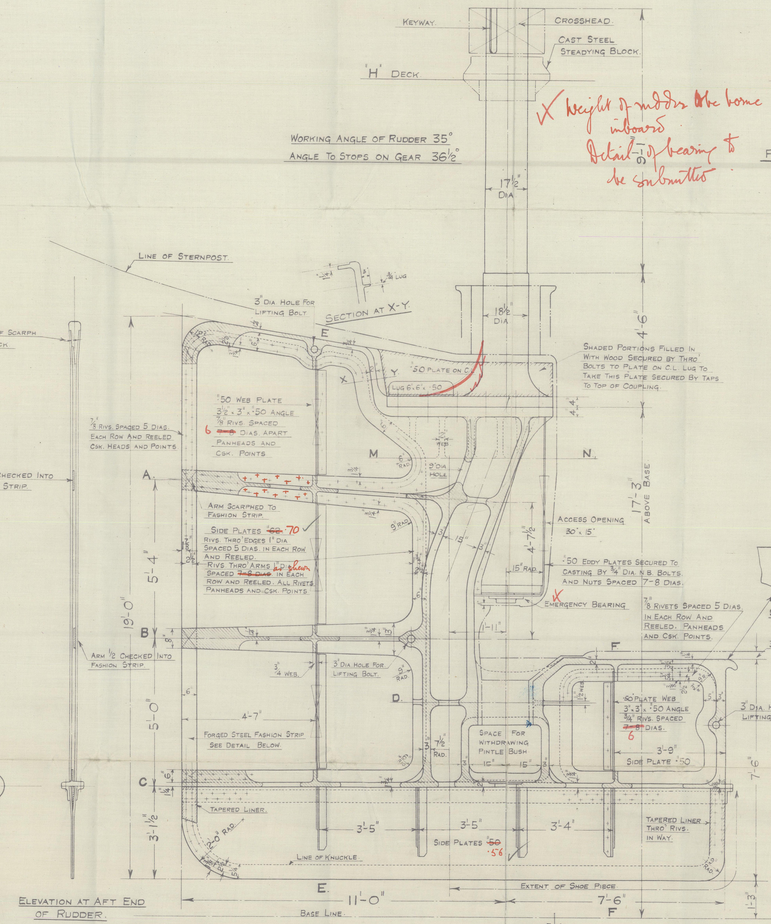




POSITION OF KEY IN RUDDER HEAD.
SCALE :- ONE INCH = ONE FOOT.

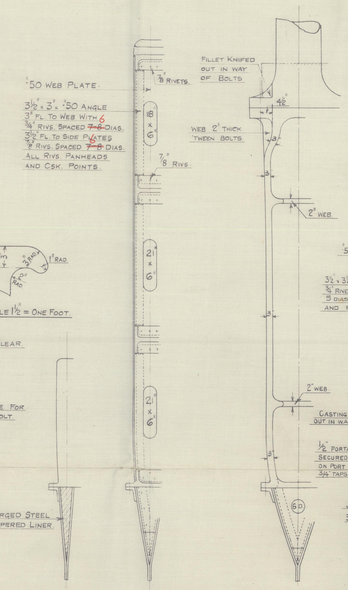


DETAIL OF BUSHING.
SCALE :- 1½ INCHES = ONE FOOT.



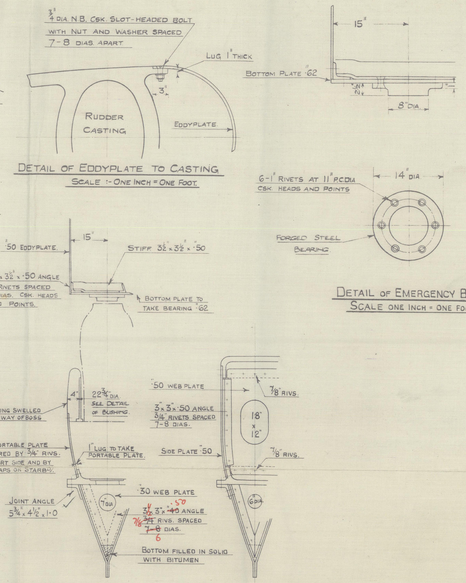
ELEVATION AT AFT END OF RUDDER.

LONGITUDINAL SECTION ON C.L. OF RUDDER.



ELEVATION OF FORE END OF RUDDER.

SECTION AT WEB E.

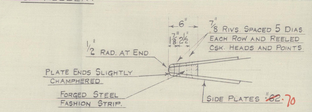


SECTION ON C.L. OF RUDDER.

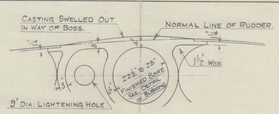
SECTION ON C.L. OF PINTLE.

SECTION ON WEB F.

DETAIL OF EMERGENCY BEARING
SCALE ONE INCH = ONE FOOT.

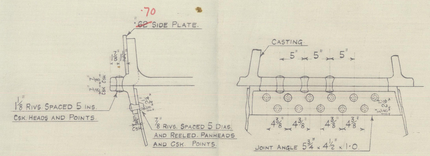


DETAIL OF FASHION STRIP.
SCALE ONE INCH = ONE FOOT.

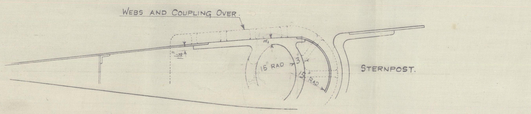


SECTION THRO' PINTLE AT D.

SECTION THRO' SHOE PIECE.
SCALE ONE INCH = ONE FOOT.



DETAIL OF JOINT RIVETING.
SCALE ONE INCH = ONE FOOT.



PLAN No. 30.

29. 3. 30.

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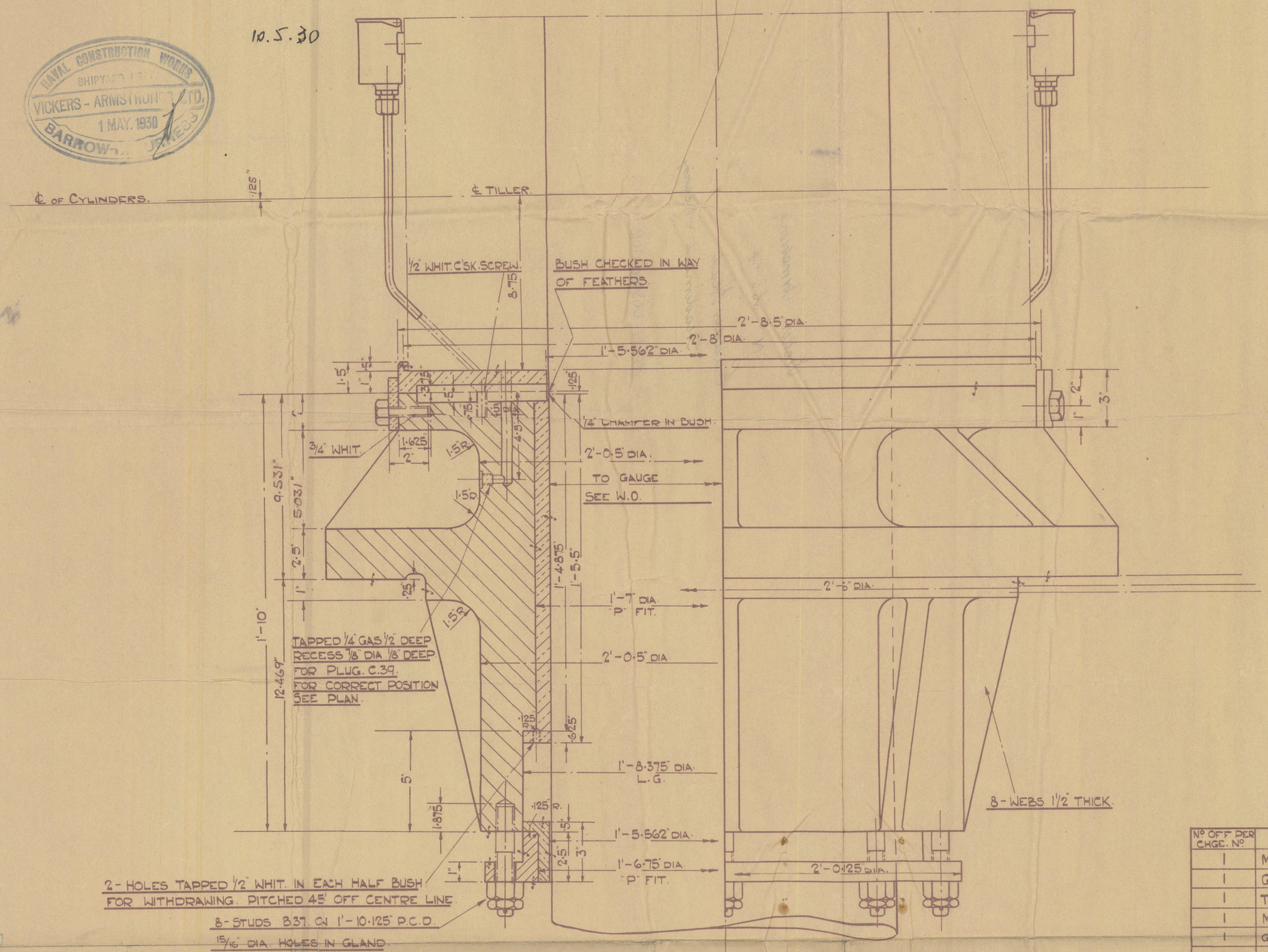
0034K-003420-0011

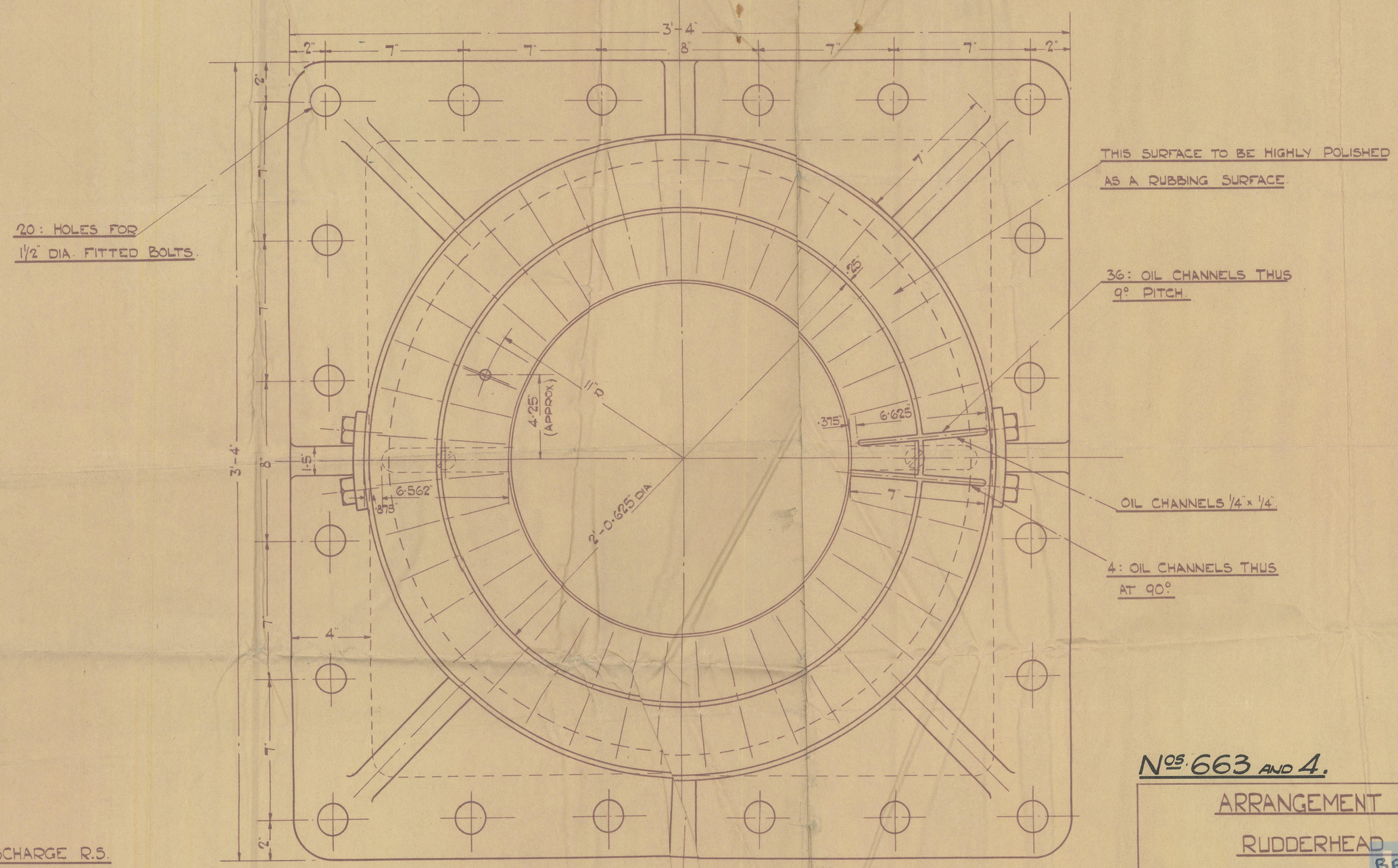
DRG No H8511.

10.5.30

NAVAL CONSTRUCTION WORKS
SHIPYARD
VICKERS - ARMSTRONGS LTD.
1 MAY. 1930
BARROW-IN-FURNESS



No OFF PER CHGE. No	DESCRIPTION.	REF. No	MATERIAL.
1	MAIN CASTING.	P.7589.	C.I.
1	GLAND.	P.4537.	C.I.
1	THRUST RING (IN HALVES)	P.7590.	"R" METAL.
1	MAIN BUSH (IN HALVES)	P.4539. MOD.	"R" METAL.
1	GLAND BUSH (IN HALVES)	P.4540.	"R" METAL.
2	RETAINING PLATE.	1	M.S.
4.	SETSCREW.	2.	M.S.



10.5.30

30.APR.30

Nos. 663 AND 4.

ARRANGEMENT & DETAILS OF RUDDERHEAD STEADIMENT & BEARING.

SCALE: 3" = 1 FT

DRAWN BY	JWS	25-4-30
TRACED BY	C.R	30:4:30
CHECKED BY		
DRAWER No		51.

DRG No H8511

SUBCHARGE R.S.

CHARGE No H835-G.

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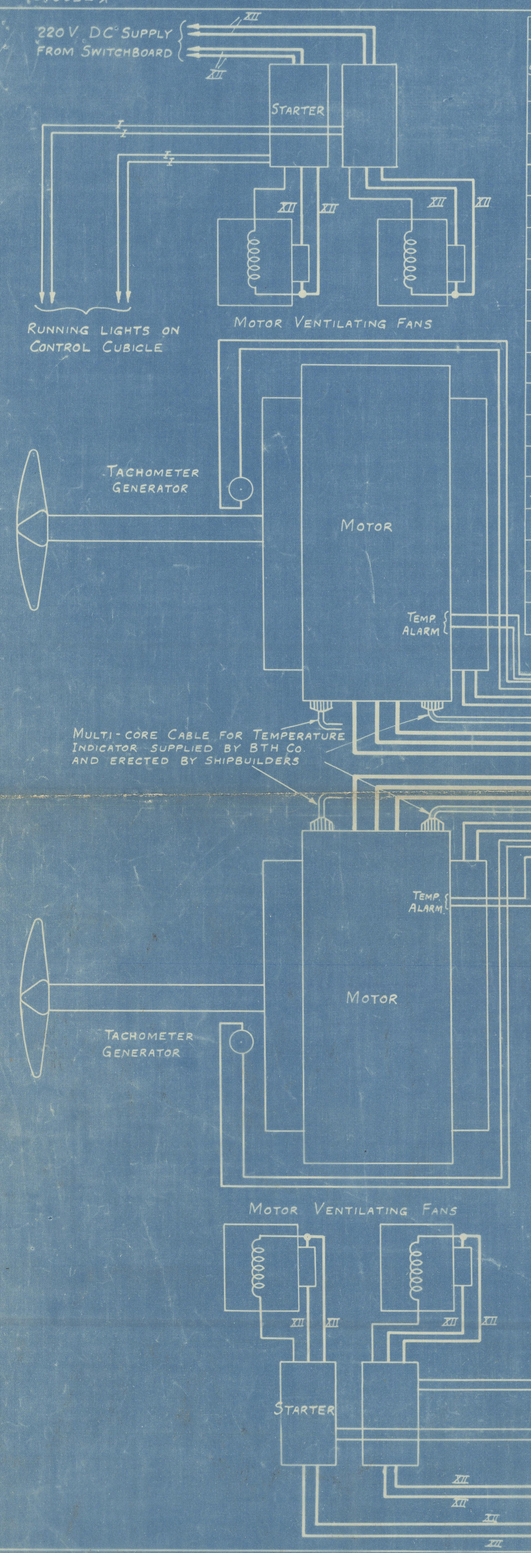
X 756802

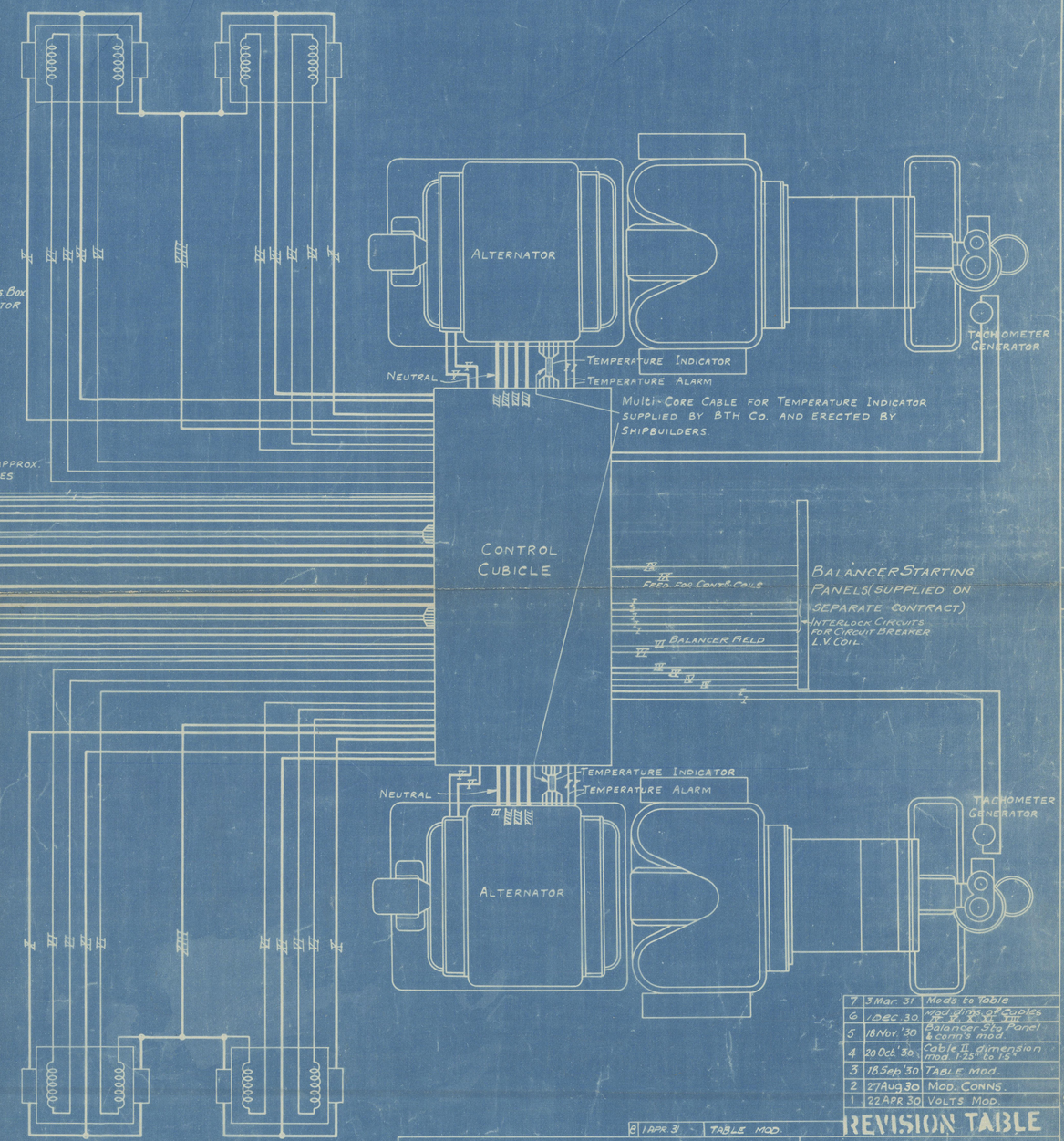


CABLE SCHEDULE

SYMBOL	CABLE	AMPERES CONT HOT	AMPERES CONT COLD	AMPERES INT. * HOT	AMPERES INT. * COLD	VOLTS	SIZE
I	CONTROL WIRING	5	—	—	—	220	·007 SQ. IN. V.I.R. L.C.: A.B.
II	PROPELLER MOTOR	2045	—	—	—	3000	2-1·5 SQ. IN. C.I.: L.C.: A.B. PER POLE
III	ALTERNATOR NEUTRAL	—	—	ø500	—	1730	·060 SQ. IN. V.C. L.C.
IV	DC SUPPLY FOR BALANCER AND MOTOR FIELDS	801	986	2005	2470	220	2-·7 SQ. IN. C.I.: L.C.: A.B. PER POLE
V	ALTERNATOR FIELD	280	280	650	770	220	·4 SQ. IN. C.I.: L.C.: AB.
VI	BALANCER-BOOSTER FIELDS	6	—	10	—	220	·007 SQ. IN. V.I.R.: L.C.: A.B.
VII	MOTOR FIELD	565	750	—	—	220/* 1000	2-·3 SQ. IN. C.I.: L.C.: A.B. PER POLE
VIII	ALTERNATOR	2740	—	—	—	3000	BUSBARS 4-3" x 1/4"
IX	FEED FOR CONTROL CIRCUITS	5	—	20	—	220	·007 SQ. IN. V.I.R.: L.C.: A.B.
X	BOOSTER	260	315	620	770	440*	·4 SQ. IN. C.I.: L.C.: A.B.
XI	BALANCER OUTERS	391	489	1825	1900	220	2-·4 SQ. IN. C.I.: L.C.: A.B. PER POLE.
XII	PROPELLER MOTOR FANS	102	—	—	—	220	·4 SQ. IN. C.I.: L.C.: A.B. TO DIS. BOX ·06 SQ. IN. " " " TO MOTOR
XIII	BALANCER MIDWIRE	260	315	620	770	220	·4 SQ. IN. C.I.: L.C.: AB.

ø For 1 sec.
* DURING MANOEUVRING

NOTE RE COLD FIELD CURRENTS. MACHINES WILL TAKE APPROX. 2 HOURS TO REACH APPROX 10% OF HOT VALUES. COLD VALUES ARE AT 20°C.



7	3 Mar. 31	Mods to Table
6	1 DEC. 30	Mod. Sizes of Cables
5	18 Nov. '30	Balancer Stg Panel & conn's mod.
4	20 Oct. '30	Cable II dimension mod. 1.25" to 1.6"
3	18 Sep. '30	TABLE MOD.
2	27 Aug. 30	MOD. CONNS.
1	22 APR 30	VOLTS MOD.
8	1 APR 31	TABLE MOD.

REVISION TABLE

CABLE LAYOUT

FIRST MADE FOR
P & O STEAM NAVIGATION CO.

S.O. C 101214 & C 101222

X756802

THE BRITISH THOMSON-HOUSTON CO. LTD. RUGBY

DRN BY	[illegible]	16 APR 30
CHD BY	[illegible]	16 APR 30
CHD BY	S.G. Watson	16 APR 30
INSP BY		

X 756802

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Maria Austin

File with
'Oratunaver'.

003418-003420-0014

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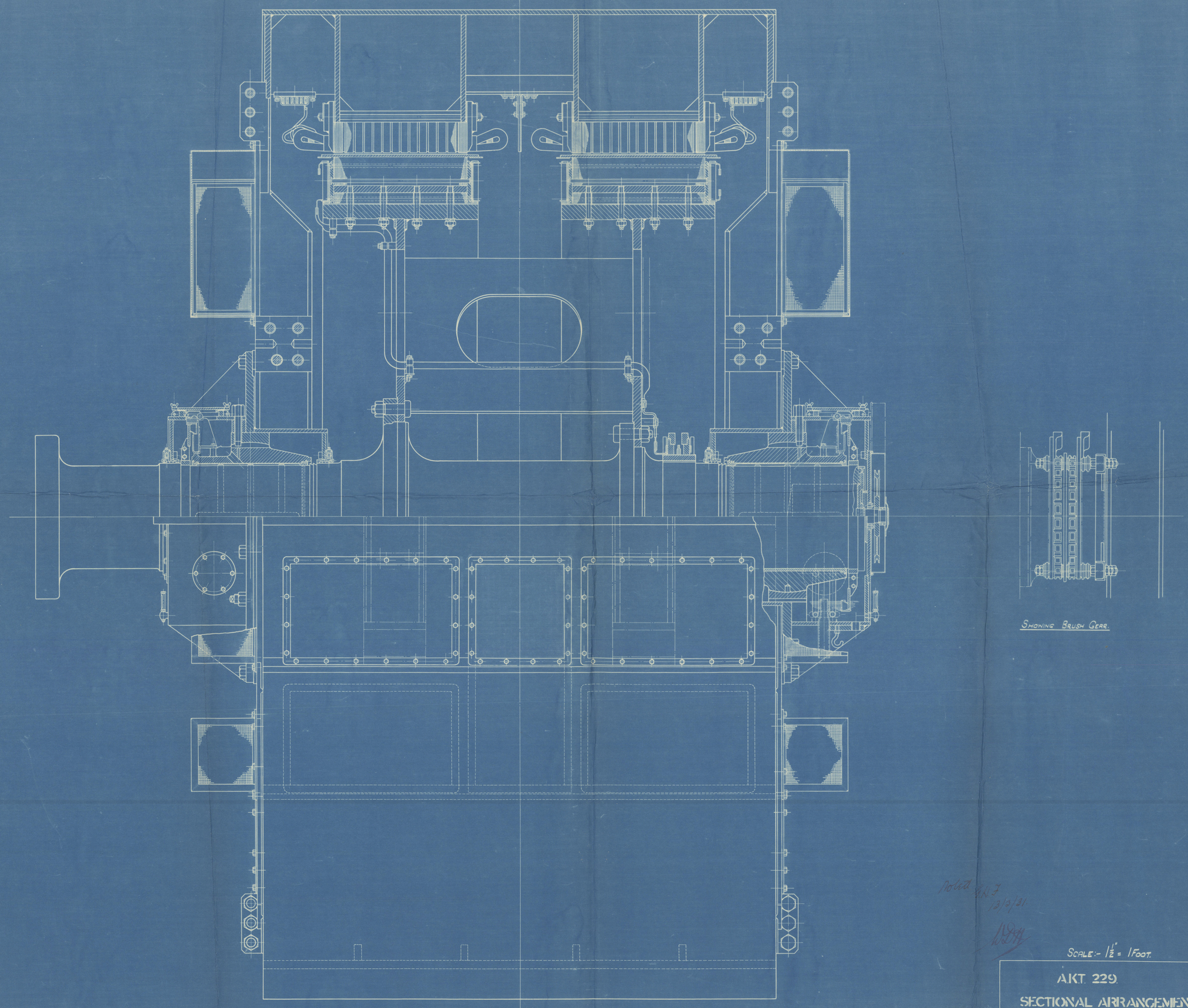
W808977



SHOWING BRUSH GEAR.

Rolled 9.N.J. 13/3/31

SCALE:- 1½" = 1 FOOT.

AKT. 229. SECTIONAL ARRANGEMENT	THE BRITISH THOMSON HOUSTON CO LTD RUGBY
FIRST MADE FOR MESSRS VICKERS ARMSTRONGS FOR P&O. S.N.Co ORDER No P. 20113 5/6 40/61	WSOS977
	DR'N BY [illegible] 6TH AUG/30 TRD BY [illegible] 12 AUG 30 CH'D BY [illegible] 18 AUG 30 INSP BY [illegible]

W.808977

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